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Moving On Up: A Case Study of HIV and COVID-Induced Guillain-Barre Syndrome

Victoria Wong Murray
Rowan University

Rebecca Chae
Rowan University

Isobel Moyer
Jefferson Health New Jersey

Cindy Hou
Jefferson Health New Jersey

Moving On Up: A Case Study of HIV and COVID-induced Guillain-Barre Syndrome

Victoria Wong Murray, MHS, OMS-II[1]; Rebecca Chae, OMS-II[1]; Isobel Moyer[2]; Cindy Hou DO, MA, MBA, FACOI, FACP, FIDSA[2]
[1] Rowan-Virtua School of Osteopathic Medicine
[2] Jefferson Health New Jersey

Introduction

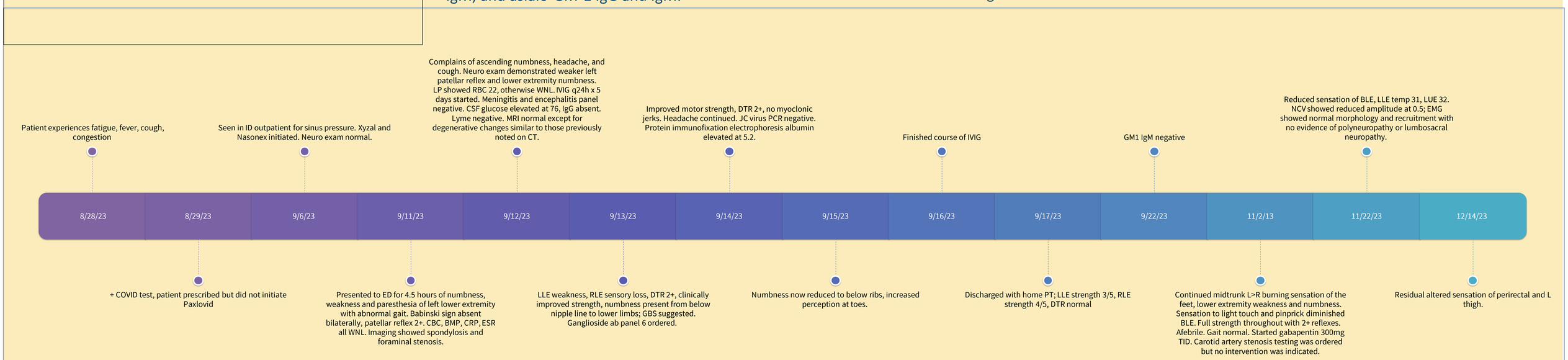
SARS-CoV-2, a pleiotropic coronavirus, was declared a pandemic in March of 2020 and has resulted in almost 1.2 million deaths. Human Immunodeficiency Virus has been estimated to affect 39 million people globally[1].
Guillain-Barre syndrome (GBS) is an autoimmune reaction against targets in the peripheral nerves, commonly gangliosides. GBS is acquired post infection and the most common subtype, acute inflammatory demyelinating neuropathy, is characterized by symmetrical ascending muscle weakness, lasting for several weeks[2]. Although many infectious causes have been characterized, COVID and HIV infection may both result in AIDP.

Case Description

A mid-30s HIV-positive man presented to the Jefferson Health New Jersey Early Intervention Program clinic with fatigue, fever, cough, and congestion, consistent with viral upper respiratory infection.
He tested positive for COVID the next day although he did not start the course of Paxlovid prescribed.
Fourteen days later, he presented to the emergency department with symptoms of numbness and paresthesia in the left lower extremity with weakness and abnormal gait. A ganglioside panel was ordered, which includes a-GM-1 IgG and IgM EIA, GD1a IgG and IgM, and asialo-GM-1 IgG and IgM.

Imaging

- Chest X-Ray: no acute changes
- CT head: no acute abnormalities
- CT angiogram: moderate to severe stenosis at origin of left vertebral artery and mild stenosis of both proximal ICAs < 50%
- CT spine: cervical spondylosis and severe bilateral foraminal stenosis at c5-7; Mild thoracic spondylosis; Lumbar spondylosis, moderate bilateral foraminal narrowing L4-5-S1
- MRI brain without contrast: no mass effect, hemorrhage, infarction
- MRI lumbar spine with and without contrast: spondylosis at L4-5, L5-S1 moderate BL foraminal narrowing; no abnormal enhancement
- MRI thoracic spine: no thoracic cord signal abnormality or enhancement, no disc herniation, no stenosis
- MRI cervical spine- no cervical cord signal abnormality, no abnormal enhancement.
- Multilevel degenerative changes, most prominent at C5-7 of mild spinal canal stenosis and severe neural foraminal narrowing



Treatment

- The patient was started on 0.4g/kg/day of intravenous immunoglobulin by IV for 5 days

Outcome

- Discharged to home with PT referral

After finishing treatment:

- Left lower extremity strength improved to 3/5
- Right lower extremity strength improved to 4/5
- DTRs normal

At routine followup after 2 months:

- Some residual altered sensation in the perirectal area and left thigh
- Motor strength normal

References:

1. van Schalkwyk C, Mahy M, Johnson LF, Imai-Eaton JW. Updated Data and Methods for the 2023 UNAIDS HIV Estimates. J Acquir Immune Defic Syndr. 2024;95(1S):e1-e4. doi:10.1097/QAI.0000000000003344

2. Hepburn M, Newey C, George P. Neurological Manifestations of COVID-19. In: *Textbook of SARS-CoV-2 and COVID-19: Epidemiology, Etiopathogenesis, Immunology, Clinical Manifestations, Treatment, Complications, and Preventive Measures*. Elsevier; :159-172. 2022.

Discussion

Although many patients raise concerns of Guillain-Barre Syndrome as a response to SARS-CoV-2 vaccination, SARS-CoV-2 infection may be a potential cause of Guillain-Barre as well, even in individuals with no prior history.

Additionally, immunosuppression may contribute to elevated titers and increase the risk of autoantibody diseases in these patients. Due to the fulminant nature of GBS and potential for rapid irreversible damage, early detection and treatment is vital.

This patient's course was similar to that previously reported in the literature with symptom onset two weeks after initial viral symptoms. Although HIV and antiretrovirals can be associated with peripheral neuropathy, his husband and support network were key in early identification of red flag symptoms and fulminant progression.